nano sensorics



Description

The **VibrexIoT** is an **industrial** wireless vibration sensor designed for **machine condition monitoring and predictive maintenance** of motors, pumps, fans, gearboxes and other rotating machinery.

Equipped with an **industrial piezoelectric vibration probe**, VibrexIoT measures **Acceleration RMS, Acceleration Peak, Velocity RMS and Crest Factor.** An integrated intelligent algorithm continuously analyzes machine vibration behavior and provides an easy-to-understand Health Index for early identification of developing mechanical faults.

Measurement data is transmitted wirelessly via the LoRaWAN® IoT network, enabling reliable remote condition monitoring in demanding industrial environments.

Applications

- Motors, pumps, fans and gearbox condition monitoring
- Bearing vibration and mechanical fault monitoring
- Predictive and preventive maintenance
- Industrial machinery health monitoring
- Production equipment and machine tool monitoring
- Factory automation and Industry 4.0 applications
- Remote monitoring of critical rotating equipment

Critical advantages

- Handles strong vibration peaks without easily saturating
- Wide frequency response covering both general machine vibration and higher-frequency vibration components
- The sensing probe can be installed directly on demanding machine locations
- Robust enough for industrial installation and operation

Product features

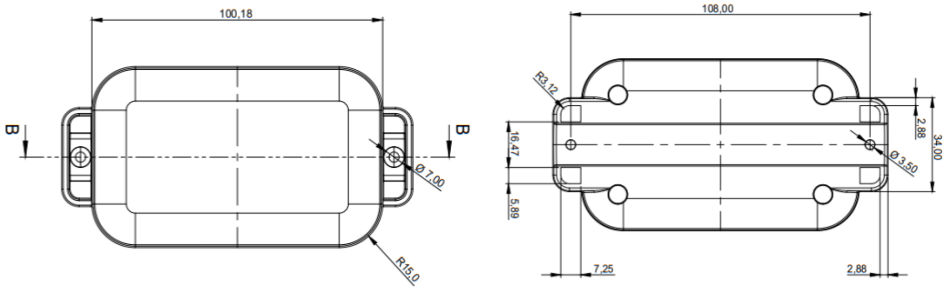
- LoRaWAN® communication
- Industrial piezoelectric vibration probe
- Wide vibration range ±50 g peak
- Wide frequency response 1–9,000 Hz
- Acceleration RMS & Peak measurement
- Velocity RMS measurement
- Crest Factor analysis
- Intelligent Health Index (1–5)
- Automatic machine behavior tracking
- Probe temperature range –40 to +120 °C
- High shock resistance up to 1,000 g peak
- Rugged 304 stainless-steel probe

Characteristics	
Sensor technology	Industrial piezoelectric probe
Acceleration range	±50 g peak
Sensitivity	~20 mV/g
Frequency response	1–9,000 Hz (±10%)
Extended response	0.5–12,000 Hz (±3 dB)
Amplitude non-linearity	±1 %
Shock resistance	1,000 g peak

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Probe temperature	−40…+120 °C
Probe housing	304 stainless steel
External probe	Separate from LoRaWAN electronics
ACC RMS	m/s²
ACC Peak	m/s²
Velocity RMS	mm/s
Crest Factor	Available
Health Index	1–5
Machine behavior tracking	Integrated
Mechanical specification	
IP rating	IP65/IP67 optional
Dimensions	121 x 62 x 26 mm
Enclosure	Plastic ASA
Storage Temperature	10 to 70 °C
Sensor Power Supply	
Battery Type and voltage	2x3.6 V AA Lithium Battery
Expected Battery Life	<7 years (Depending on configurations and environment)
Radio / Wireless specification	
Wireless Technology	LoRaWAN® 1.0.3
Wireless Security	End-to-End encryption (AES-CTR), Data Integrity Protection (AES-CMAC)
LoRaWAN Device Type	Class A End-device
Supported LoRaWAN® features	Default - OTAA , Optional - ABP, ADR, Adaptive Channel Setup
Supported LoRaWAN® regions	EU863 – 870, US902 – 928, optional: EU863 – 870, AU915 – 928, EU433, RU864, IN865
TX Power	14dBm±1dBm (Region specific)
Rx Sensitivity	132 dBm (LoRa, Spreading Factor=12, Bit Rate=293bps) -118 dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps)
Link Budget	137 dB (SF7) to 151 dB (SF12)
Communication range	10 km (line-of-sight, actual transmission distance depends on the environment)

Sensor dimensions:



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